

WHAT IS CLAIMED IS:

1. A DUV-capable microscope objective that contains lens groups made of quartz glass and fluorite and has a DUV focus at a DUV wavelength $\lambda_{\text{DUV}} = 235 \text{ nm}$ as well as a short focal length, **wherein**
 - a) the DUV focus encompasses a DUV wavelength region $\lambda_{\text{DUV}} \pm \Delta\lambda$, where $\Delta\lambda = 8 \text{ nm}$;
 - b) the objective additionally has an IR focus for an IR wavelength $\lambda_{\text{IR}} = 760 \text{ nm}$ at the same focal point as the DUV focus at λ_{DUV} ;
 - c) for which purpose a penultimate element of the objective is of concave configuration on both sides, and its object-side outer radius is much smaller than its image-side outer radius.
2. The objective as defined in Claim 1, **wherein** the penultimate element is a doublet, concave on both sides, that has the material sequence quartz glass/fluorite in the imaging direction.
3. The objective as defined in Claim 1, **wherein** the diverging penultimate element is a triplet, concave on both sides, that has the material sequence quartz glass/fluorite/quartz glass in the imaging direction.
4. The objective as defined in Claim 1, **wherein** the diverging penultimate element is a triplet, concave on both sides, that has the modified material sequence quartz glass/lithium fluoride/quartz glass in the imaging direction.
5. The objective as defined in Claim 1, **wherein** the diverging penultimate element, concave on both sides, is made up of individual lenses made of quartz glass and fluorite.
6. The objective as defined in Claim 2, **wherein** the diverging penultimate element, concave on both sides, is made up of individual lenses made of quartz glass and lithium fluoride.

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7. The objective as defined in Claim 1, **wherein** the objective comprises, viewed in the imaging direction, the following schematic configuration:
- a converging individual first lens made of quartz glass as the front lens;
 - a converging individual second lens made of fluorite;
 - a first doublet comprising a diverging third lens made of quartz glass and a converging fourth lens made of fluorite;
 - a first triplet combined of a fifth lens made of fluorite, a sixth lens made of quartz glass and a seventh lens made fluorite
 - a second triplet combined of a eighth lens made of quartz glass and a ninth lens made of fluorite and a tenth lens made of quartz glass
 - a converging lens group;
 - a penultimate diverging element which is of concave shape on both sides and whose object-side outer radius is much smaller than the image-side outer radius; and
 - a diverging doublet combined of a converging lens made of quartz glass and a diverging lens made of fluorite.
8. The objective as defined in Claim 7, **wherein** the converging individual lens and the doublet are combined into a triplet having the material sequence fluorite/quartz glass/fluorite.
9. The objective as defined in Claim 7, **wherein** it has a DUV focus in a DUV wavelength region $\lambda_{\text{DUV}} = 248 \text{ nm} \pm 8 \text{ nm}$ or in a DUV wavelength region $\lambda_{\text{DUV}} = 266 \text{ nm} \pm 8 \text{ nm}$.
10. The objective as defined in Claim 7, **wherein** it has a DUV focus in a DUV wavelength region $\lambda_{\text{DUV}} = 248 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 760 \text{ nm}$ and possesses the data listed in Table 1.

11. The objective as defined in Claim 7, **wherein** it has a DUV focus in a DUV wavelength region $\lambda_{\text{DUV}} = 248 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 825 \text{ nm}$ and possesses the data listed in Table 2.
12. The objective as defined in Claim 7, **wherein** it has a DUV focus in a DUV wavelength region $\lambda_{\text{DUV}} = 248 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 885 \text{ nm}$ and possesses the data listed in Table 3.
13. The objective as defined in Claim 7, **wherein** it has a DUV focus in a DUV wavelength region $\lambda_{\text{DUV}} = 248 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 905 \text{ nm}$ and possesses the data listed in Table 4.
14. The objective as defined in Claim 8, **wherein** it has a DUV focus in a DUV wavelength region $\lambda_{\text{DUV}} = 266 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 780 \text{ nm}$ and possesses the data listed in Table 6.
15. The objective as defined in Claim 7, **wherein** it has a DUV focus in a DUV wavelength region $\lambda_{\text{DUV}} = 266 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 785 \text{ nm}$ and possesses the data listed in Table 7.
16. The objective as defined in Claim 8, **wherein** it has a DUV focus in a DUV wavelength region $\lambda_{\text{DUV}} = 266 \text{ nm} \pm 8 \text{ nm}$ and an IR focus at $\lambda_{\text{IR}} = 845 \text{ nm}$ and possesses the data listed in Table 8.
17. The objective as defined in Claim 1, **wherein** the IR focus lies between 760 nm and 920 nm.
18. The objective as defined in Claim 1, **wherein** the DUV focus lies between 200 nm and 300 nm.

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